

Lassa Hemorrhagic Fever

Report Immediately

February 2003

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Lassa hemorrhagic fever (LHF) belongs to group of viral hemorrhagic fevers (VHFs) including numerous zoonotic diseases, all of which cause a hemorrhagic syndrome in humans. Lassa fever is caused by *Arenavirus*. VHFs have been recognized by the Centers for Disease Control and Prevention (CDC) as being among the top agents of concern for potential bioterrorist weapons.

B. Clinical Description and Laboratory Diagnosis

The onset of Lassa hemorrhagic fever is usually gradual, with malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhea, myalgia, and chest and abdominal pain; fever is persistent or spiking. About 80% of infections are mild or asymptomatic; the remaining cases have a severe multisystem disease. In severe cases, hypotension or shock, pleural effusion, hemorrhage, seizures, encephalopathy and edema of the face and neck are common. Bleeding occurs from mucous membranes including nosebleeds, and bleeding from mouth, or genitourinary or gastrointestinal tract. Reduced white blood cell and platelet levels are frequently seen, and renal failure may occur. Mortality rates for patients hospitalized with LHF are estimated as 15%, and for all infected people are estimated as 1%.

Laboratory diagnosis is made by IgM antibody or viral antigen detection by ELISA or by PCR; by isolation of virus from blood, urine or throat washings, and IgG seroconversion by ELISA or IFA. **Laboratory specimens are biohazardous and must be handled with extreme care.**

C. Reservoirs

Many wild and domestic animals, ticks, and mosquitoes in Africa are known to carry some of the VHF agents, although the reservoirs have not been identified for all VHF agents. For Lassa virus the reservoir is the “multimammate rat” of the genus *Mastomys*. *Mastomys* rodents are numerous in the West, Central and East Africa. Some species prefer to live in humans’ homes.

D. Modes of Transmission

The virus is present in excreta of infected rodents and can be transmitted through aerosol or direct contact with these materials, through touching contaminated objects or eating contaminated food. Laboratory-acquired infections occur, especially in the hospital environment, direct contact with blood, pharyngeal secretions or urine of a patient. Lassa fever can also be spread from person -to-person contact through exchange of body fluids. However, it cannot be spread through casual contact without body fluids exchange.

E. Incubation Period

The incubation period for Lassa fever range from 3 to 21 days, with an average of 10 days.

F. Period of Communicability or Infectious Period

Infected individuals are generally considered infectious during the course of clinical symptoms. Virus may be excreted in the urine of patients for 3-9 weeks from the onset of illness.

G. Epidemiology

Lassa virus is endemic in Sierra Leone, Liberia, Guinea and regions of Nigeria. Cases have been reported from the Central African Republic.

H. Bioterrorist Potential

The viruses that cause VHFs, including Lassa virus, are considered potential bioterrorist agents. If acquired and properly disseminated, these viruses could cause a serious public health challenge in terms of ability to limit the numbers of casualties and control other repercussions from such an attack.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition

CASE CLASSIFICATION

A. CONFIRMED

Clinically compatible case, **AND**

- Positive IgM anti-Lassa virus or antigen detection by ELISA or PCR tests, **OR**
- Isolation of Lassa virus from blood, urine or throat washings, **OR**
- IgG seroconversion by ELISA or IFA tests.

B. PROBABLE

Clinically compatible case without laboratory confirmation.

C. POSSIBLE

Initially reported case on the basis of clinical diagnosis until confirmation is obtained; no possible case classifications are retained.

Report any illness suspected by a healthcare provider of being LHF and any potential exposure to an agent that could cause LHF.

B. Laboratory Testing Services Available

The NJDHSS Public Health and Environmental Laboratories (PHEL) do not provide services for testing clinical specimens for LHF. However, the CDC offers testing. After consulting with Infectious and Zoonotic Diseases Program (IZDP), arrangements can be made for sending specimens to the CDC through the PHEL Viral Serology Laboratory at 609.984.2622. IZDP and the Viral Serology Laboratory will provide guidance on what specimens to send and how to send them.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify potential sources of transmission which may exist in the United States (such as non-human primates or laboratory specimens).
- To identify sources of transmission and geographical areas of risk outside of the United States.
- To stop transmission from such sources and geographical areas.

- To identify cases as early as possible to prevent transmission to other persons or animals.
- To identify cases and clusters of human illness that may be associated with a bioterrorist event.

B. Laboratory and Healthcare Provider Reporting Requirements

The New Jersey Department of Health and Senior Services requests that healthcare providers **immediately report** to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the health care provider requesting the laboratory examination is located any suspect case of LHF, or any potential exposure to an agent which could cause LHF. If this is not possible, call the NJDHSS Infectious and Zoonotic Diseases Program at 609.588.7500 during business hours, or 609.392.2020 after business hours on weekends and holidays. Telephone reports shall be followed up by a written or electronic report within the 24 hours of the initial report.

Note: Since the CDC is the principal testing laboratory for viral hemorrhagic fevers including LHF in the United States, any case in New Jersey resident would be reported to NJDHSS by CDC, and NJDHSS would, in turn, notify the local health officer in the community where the patient resides.

C. Local Departments of Health Reporting and Follow- Health Up Responsibilities.

1 Reporting Requirements

The New Jersey Administrative Code (N.J.A.C. 8:57-1.8) stipulates that each local health officers must report the occurrence of any confirmed or suspected case of Lassa hemorrhagic fever, as defined by the reporting criteria in Section 2 A above. Current requirements are that cases be **immediately reported** to the NJDHSS Infectious and Zoonotic Diseases Program.

2. Case Investigation

- The most important step a local health officer can take if he/she learns of a suspect or confirmed case of Lassa hemorrhagic fever, or any potential exposure to an agent which could cause LHF, is to call the NJDHSS immediately, any time of the day or night.** Daytime phone number of the Infectious and Zoonotic Program NJDHSS is 609.588.7500. The emergency phone number for nights and weekends is 609.392.2020.
- The Infectious and Zoonotic Diseases Program NJDHSS will direct case investigation of New Jersey residents, in conjunction with the CDC. If a bioterrorist event is suspected, the NJDHSS and other response authorities will work closely with local health officer and provide instructions/information on how to proceed.
- Following immediate notification of the NJDHSS, the local health officer(s) may be asked to assist in investigating any case living within their communities, including gathering the following:
 - 1) The patient's name, age, address, phone number, status (hospitalized, at home, deceased), and parent/guardian information, if applicable.
 - 2) The name and phone number of the hospital where the patient is or was hospitalized.
 - 3) The name and phone number of the patient's attending physician.
 - 4) The name and phone number of the infection control official at the hospital.
 - 5) If the patient was seen by a healthcare provider before hospitalization, or seen at more than one hospital, it is important to have these names and phone numbers as well.
- The local health officer(s) may be asked to assist in completing a [CDS-1 form](#). A report can be filed electronically over the Internet using the confidential and secure Communicable Disease Reporting

System (CDRS). Most of the information required on the form can be obtained from the healthcare provider or the medical record. Use the following guidelines in completing the form:

- 1) Record Lassa hemorrhagic fever as the disease being reported.
- 2) Record the patient's demographic information.
- 3) Record the date of symptom onset, symptoms, date of diagnosis, hospitalization information (if applicable), and outcome of disease (*e.g.*, recovered, died).
- 4) Exposure history: Use the incubation period range for LHF (3–21 days, average 10 days). Specifically, focus on the period beginning a minimum of 2 days prior to the patient's symptoms onset date back to no more than 16 days before onset for travel history; determine the date(s) and geographic area(s) traveled to by the case to identify where the patient may have become infected.
- 5) Complete the important travel history section to indicate where LHF was acquired. If unsure, check "Unknown."
- 6) Include any additional comments regarding the patient.
- 7) If you have made several unsuccessful attempts to obtain case information (*e.g.*, the patient or healthcare provider does not return your calls or respond to a letter, or the patient refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as possible. Please note on the form the reason why it could not be filled out completely. **If CDRS is used to report, enter collected information into the "Comments" section.**

After completing the case report form it should be faxed to the NJDHSS Infectious and Zoonotic Diseases Program at 609.631.4863 or the report can be filed electronically over the Internet using the confidential and secure Communicable Disease Reporting System (CDRS). Please call the NJDHSS Infectious and Zoonotic Diseases Program at 609.588.7500 to confirm fax or CDRS filing.

- f. Institution of disease control measures is an integral part of case investigation. It is the local health officer's responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4, "Controlling Further Spread."

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (N.J.A.C. 8:57-1.10)

Minimum Period of Isolation of Patient

Patients should be isolated until they are clinically well, and then monitored. Because blood and secretions may contain virus for up to several months, patients must be educated and monitored for infectiousness. The LHF virus can be isolated from urine for 3 to 9 weeks after onset of illness. Intimate contacts should be cautious and condoms should be used during sex for 3 months or until the semen has been shown to be free of virus. For more detailed recommendation see "Management of Patients with Suspected Viral Hemorrhagic Fever—United States," [MMWR 1995;44\(25\):475-479](#).

Minimum Period of Quarantine of Contacts

See Section 4 B, "Protection of Contacts of a Case," directly below.

B. Protection of Contacts of a Case

There is no immunization or prophylaxis for contacts of cases. Healthcare workers and other contacts of known or suspected cases of LHF should practice standard (including respiratory) precautions together with contact precautions to reduce their chances of acquiring LHF. Their healthcare provider should monitor individuals who have had any contact with infectious patients for the maximum 21 days. The monitoring

should include: checking body temperature at least 2 times daily for at least 3 weeks after last exposure. In a case of temperature greater than 38.3 C (101 F), the sick person should be immediately hospitalized in the strict isolated facility.

C. Managing Special Situations

Reported Incidence Is Higher than Usual/Outbreak Suspected

If an outbreak is suspected, primary investigation will be handled by the NJDHSS in conjunction with the CDC. A source of infection, such as travel to a geographical region where a known outbreak of LHF is occurring, will be sought and applicable preventive or control measures will be instituted. The Department can determine a course of action to prevent further cases and can perform surveillance for cases that cross several jurisdictions and therefore be difficult to identify at a local level. The local health officer may be asked to assist in the investigation to help determine the source of infection and to implement any necessary control measures.

Note: If a bioterrorist event is suspected, the NJDHSS and other authorities will work closely with local health officers and provide instructions/information on how to proceed.

D. Preventive Measures

Environmental Measures

No environmental measures are necessary; LHF does not occur naturally in United States.

Personal Preventive Measures/Education

To avoid cases of LHF:

- Avoid traveling to areas with known outbreaks of LHF.
- Laboratory workers handling specimens suspected of containing the agents of LHF must take appropriate precautions.

For more information regarding international travel and LHF, contact the [CDC's Traveler's Health Office](http://www.cdc.gov/travel) at 877.394.8747 or through the Internet at <<http://www.cdc.gov/travel>>

ADDITIONAL INFORMATION

There is no formal CDC case definition for LHF. CDC case definitions are used by state health departments and CDC to maintain uniform standards for national reporting. For reporting a case to the NJDHSS, always refer to criteria in Section 2 A of this chapter.

REFERENCES

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